

Ms. Margaret Davidson
Acting Assistant Administrator
DOC/NOAA National Ocean Service
1305 East-West Highway
Silver Spring, MD 20910

Dear Ms. Davidson:

We understand that the U.S. Department of Commerce is reviewing Executive Orders 13179 and 13196, which created the Northwestern Hawaiian Islands (NWHI) Coral Reef Ecosystem Reserve. The following is provided to assist in your decision making process by giving specific fisheries data and outlining potential impacts. The State of Hawaii Department of Land and Natural Resources (DLNR) has the statutory oversight for managing all aquatic life within State waters. We are also mandated by State law to collect fisheries data for all commercial fishing activity occurring in or landed in State waters. These confidential data are used to manage the fisheries resources and are shared with the National Marine Fisheries Service (NMFS) through a memorandum of agreement. It is through the individual catch reports and compilation of fisheries data that NMFS and the Fisheries Council set policy and manage most fishery stocks in the NWHI.

We have undertaken an in-depth analysis and review of the fisheries data in the NWHI in order to assess the impacts of the proposed area closures on our commercial fisheries. It is our understanding that regardless of the final decisions on the Executive Orders (EO), some of the area is slated for closure under the Western Pacific Regional Fishery Management Council's (WPRFMC) proposed Coral Reef Ecosystem Fishery Management Plan. In addition, DLNR is in the initial stages of developing a management framework for State waters in the NWHI. The objectives of our analysis are to assess the economic impacts of the proposed closures under the

various management regimes to our commercial fishermen, and to provide specific information to aid the Bush Administration in the review of the EO. Significant differences in the estimates of impact to the fisheries have been proposed by the fisheries advocacy groups and the environmental community. Our goal is to use the available data to analyze the impacts.

Importance of the NWHI Resources:

The State recognizes the importance of maintaining healthy and abundant resources in the NWHI. The near pristine nature of the area ensures that numerous rare and unique organisms found nowhere else on earth will survive to be treasured by future generations. The area represents a wealth of natural and cultural/historical diversity that must be held in public trust. Balancing uses to maintain a vital coral reef ecosystem is a necessity. However, we feel that the bottomfish fishery is well managed and does represent an opportunity to balance economy and ecology. The bottomfish fishery in the NWHI represents nearly half of all the landings and more than half of the value for this fishery statewide. Conversely, the fishery in the main Hawaiian Islands has been heavily fished with significant effort. The bottomfish are highly prized fish that bring premium prices at market and are served in most of the 5-star restaurants. These fish are important culturally.

Findings Overall:

Based on the assessment of fisheries data for the bottomfish fishery over the past 5 years, we estimate that the area closures in the EO represent a range of impacts of over 12% and up to 30% of the catch, and a range of over 12% and up to 28% of the value. While the higher numbers represent the likely worst case scenario, the data are not precise enough to further refine the numbers. Table 1 summarizes the data in the worst case scenario. Based on the available data, we feel the lower end of the range accurately reflects the minimum impact to the fishery. Obviously, the actual impact of the closures to the fishery lies somewhere between these two extremes. The bathymetric data do not yet exist to estimate even the total amount of area closures from 0-100 fathoms around each island and bank. The fisheries data reporting system was not designed to report precise locations but instead collect fishing effort and catch data from areas as small as a 20 x 20 square mile grid.

The maximum impact to the fishery is based on assuming that the fishing in an entire grid would be closed even if perhaps only a portion of the grid is actually closed. The minimum impact is based on the catch data in the known closure areas. This analysis represents the results of over 120 hours of staff time and effort to obtain the best available estimates and ranges of impacts

based on the data.

We feel that by over-estimating the impacts at some of the islands and banks and potentially underestimating the impacts at others, that our numbers reflect a fairly accurate assessment of impact overall to the fishery. To provide you with a thorough understanding of the process we used to obtain these numbers, we will describe the analysis and assessment methodology in the attached appendix.

We hope that this information proves useful to you in your ongoing review of EO 13179 and 13196. If we can be of any further assistance, please do not hesitate to contact me at (808) 587-0401. We would like to thank you for considering this new information as you move forward towards decision making on the NWHI Coral Reef Ecosystem Reserve.

Very truly yours,

GILBERT S. COLOMA-AGARAN

Enclosures

cc: The Honorable Daniel K. Inouye, U.S. Senator
The Honorable Daniel K. Akaka, U.S. Senator
The Honorable Neil Abercrombie, U.S. Congressmen
The Honorable Patsy Mink, U.S. Congresswomen
The Honorable Benjamin J. Cayetano, Governor
Robert Smith, NWHI Reserve Coordinator
Timothy E. Johns, State of Hawai'i NWHI Reserve Council State Representative

Analysis of Northwestern Hawaiian Island Coral Reef Ecosystem Reserve Impacts to the Bottomfish Fishery

The Data:

DLNR staff summarized all data for the bottomfish fishery in the NWHI between 1996-2000. In accordance with the Fishery Management Plans (FMP) under the WPFRMC, fishermen report catch for 2 types of fishery management unit species (MUS), bottomfish management unit species (BMUS), and pelagic management unit species (PMUS). With the exception of lobsters, other species are not managed by an FMP. Fishermen are required to report all take on their fishing logs as incidental catch. The fishermen report their catch by a numbered and lettered grid. Each grid represents a 20 x 20 square nautical mile area. Grids are also reported in association to the nearest landmark or bank. Most fishermen also report the beginning and ending depth for each bank fished. Many log books not only reflect the grid fished but are further broken down into quadrants by area of the grid fished, i.e. NW, SE, etc. The data are reported as total fish caught and number released, by species caught, and beginning and ending depths fished. As this is a limited entry fishery with only 17 boats, ensuring that fishermen in this fleet maintain accurate and complete log books of fishing activity is easily accomplished.

Assessment Methodology:

Compiled and analyzed fisheries data from 1996-2000 were further refined by MUS type and assessed to determine the total catch and value by island or bank. For each designated closed area from 0-100 fathoms (or some fraction therein) under EO 13179 and 13196, the data were broken down by the beginning and ending depths for each bank fished and by BMUS, PMUS and others. For each bank fished, the beginning minimum and maximum depth and the ending minimum and maximum depth for each bank were recorded, and an average for each was determined based on the available data. Data were further analyzed based on the top species landed for each island or bank to correlate the depth of fishing with the targeted species being caught to ensure consistency in the data, as different species are caught at different depths. The initial goal was to identify the areas where fishing was occurring inside versus outside of 25 fathoms. Table 2 from Necker Island provides an example of this data set.

Once the initial assessment of data had been made, the data were compared to the 20 x 20 square nautical mile grids to correlate catch with specific location by island or bank. (A copy of the

grids with the areas highlighted by associated island is included with this letter to assist in your understanding of these data.) Each closure area was analyzed based on a) the beginning and ending fishing effort by depth, b) the amount of area within or outside of State waters, c) and whether the closures would potentially affect all types of fishing activity or just BMUS and other and not the pelagic catch. In the areas where the closures would affect all types of fishing activity, such as French Frigate Shoals, a total for catch was calculated. Total catch for each area closed was divided by the total for the entire NWHI to determine the percentages of impact for each area. Where the specific island data indicated that almost all the fishing effort was outside of the closure areas, in other words at depths greater than 25 fathoms (in most cases), the data were not further analyzed. Islands and banks where minimum and/or average depths fished were outside of 25 fathoms were considered to be minimally impacted by the area closures. Where the data indicated that much of the effort and species targeted were likely to be caught inside 25 fathoms, the data were further refined.

For each 20 x 20 sq.n.mi. grid that contained species or depths inside of 25 fathoms, the fisheries data were further broken down into locations within the individual grid, for example the data for any one grid may be recorded by quadrant directions including NE, NW, SE and SW quadrant. Each quadrant was assessed for bottomfish MUS and other species but not for pelagic species since most pelagic species were caught outside of 100 fathoms. Table 3 provides an example of the data from one quadrant within a grid at Necker Island to further illustrate this analysis. Each grid was compared to the charted closure areas to try to determine where within the grid the closure area may exist. As catch is recorded for the entire grid no attempt was made to differentiate between landings inside and outside of State waters. In only one case, off Kure Atoll, were staff able to match the closure area with the NW or NE quadrants on an individual grid to further refine the data. In all other cases, all bottomfish management unit and other species were included in the assessment of impacts for each individual grid, because it was not possible to determine whether reported catch was inside or outside of the proposed closure area or inside or outside of State waters.

Every effort was made to maintain statistical viability of the data and not to attempt to assess impacts based on a best guess (i.e. fractions of closed area within a grid were applied to the total grid). We were inclusive in the assumptions of impact since further refinement of the data was not possible. The fisheries catch information was not designed to determine the impacts in an area smaller than a 20 x 20 sq.n.mi. grid. Fishermen guard their exact locations of fishing as a trade secret and to ask for more refinement could potentially compromise confidentiality. We would welcome recommendations on methods to further refine the fisheries data by more precise locations, while maintaining confidentiality, as we move forward toward Sanctuary designation.

The bottomfish fishery is not only a limited entry fishery with just 17 boats, it is also managed by zones with only 10 permits issued for the islands and banks in the southern end of the NWHI chain, (known as the Mau Zone) and 7 permits issued for the vessels fishing in the islands in the

Northern end of the chain (known as the Ho'omalū Zone). In an effort to provide further clarification of the impacts to the fishery based on the area closures, we are also outlining the effects by zone below.

Assessment of Impacts by Zone:

I. Mau Zone:

The 10 permits in the Mau Zone are characterized by fishermen with very small vessels averaging 35 feet or less in length and capable of traveling limited distances of about 500 miles. They have limited hold capacity and generally target the shallower species. There are very few boats in the fleet that are capable of making the trip to Necker Island and back.

A significant portion of the fishing activity occurs inside of 25 fathoms targeting thick-lipped jacks (*Pseudocaranx dentex*) and gray snapper (*Aprion virescens*). While the area closure at Nihoa Island appears to be relatively small, and therefore not likely to significantly affect the fishery, the same is not true for Necker Island. Under the worst case scenario where all catch within a grid which was partially closed was considered entirely closed, area closures at Necker may affect as much as 12.5% of the total landings for the NWHI. The closure at Necker could also reduce the availability of gray snapper by more than half of the total catch of this species for the entire region.

II. Ho'omalū Zone:

There are only 7 vessels permitted to fish in this area which is nearly 1,000 miles long. The vessels range in length from about 40-80 feet. The vessels target the high value, deeper water snappers and fish mainly outside of 25 fathoms. Due to distances traveled, the fleet will fish for pelagic species on the way to and from the fishing grounds in order to be able to fill their holds. The WPRFMC fishery management plan permit requires that the fleet must travel over 700 miles before they can begin to fish for the bottomfish species. Many of the fishermen in this fleet are highly skilled and have been fishing these waters for many years.

In both zones, fishing is done by anchoring in shallower waters and drifting back over the drop offs or by drifting across a bank or ledge while fishing. Often, the vessel will fish actively for a few days and then move into shallower waters to anchor and rest in the lee of an island before returning to the deeper waters to fish again. As the new area closures limit activity inside of 25 fathoms, fishing methods will need to be altered significantly. In many cases the catch data reflect the depth at which fishing began, however this may not be the initial depth at which the vessel began to actively prepare to engage in fishing. While average minimum depths at which fishing began for most of the islands, atoll and banks in the Ho'omalū Zone are greater than 25 fathoms, it is not possible to calculate the impact to the fleet that will occur from their inability

to access shallower waters. The inability to anchor in 25 fathoms or less in some areas could have a significant impact on the deeper water fishery.

Regardless of the outcomes to EO 13179 and 13196, the French Frigate Shoals (FFS) area is slated to be closed to a depth of 50 fathoms by the WPRFMC and the State of Hawaii. Biological data indicate that this area has the most biodiversity of any area in the Hawaiian archipelago. It has the largest breeding population of Hawaiian monk seals, a population that is currently in decline at this location, and is the nesting grounds for 90% of all Hawaiian green sea turtles throughout the chain. Closure of the area is justified; however, this closure will have significant impacts to the fleet.

FFS is the first area in the Ho‘omalau Zone. The smallest of the vessels currently fishing in the Ho‘omalau Zone do not have the range to fish much beyond this Shoal. The banks and shoals around FFS represent the first and last place in which fishing can occur on the way to and from fishing grounds further from the main Hawaiian Islands. Fishermen use this site to top off their holds, if fishing has not been productive at the sites further up the chain, in order to be able to meet their fishing quotas and pay for expenses. The area closures in EO 13179 and 13196 at FFS and the adjacent banks represent over 10% of all catch for the entire NWHI fishery.

While the average and beginning depths fished at Gardner Pinnacle are outside of the closure areas, and therefore were not considered in the estimates of impacts to the bottomfish fishery, there are likely some impacts that will occur that are not reflected in the catch data. At Maro Reef, the beginning depths fished were 20 fathoms, and the closure begins at 25; data are not available to calculate the impact, but the topography changes at depth in any of these areas can be substantial. The beginning depths fished at Laysan Island were at 40 fathoms and the closure extends out to a depth of 50 fathoms, however it is impossible to calculate the impact based on the data. Data for all three areas were therefore not considered in the total percentages of estimated impacts.

Most of the waters to 100 fathoms at Pearl and Hermes Atoll are inside of State waters and not currently closed. However, there are small areas of closure from the end of State jurisdiction to 100 fathoms at three locations around this Atoll. As data could not be analyzed to determine the percentages of effort that occurred inside and outside of State waters or inside and outside of the closure areas, the entire area was considered in the assessment of impacts.

Very few vessels fish Kure Atoll due to the distances required to fish there. As we stated earlier, we were able to overlay the reported catch data on the 20 x 20 sq.n.mi. grids with the closure areas and fairly easily assess the impacts to the fishery at this Atoll. This represents the only area where the grid data and the closure area data could be compared and assessed for impacts.

In summary

Until more accurate maps of the region are produced, and the total area closed for each island and bank is analyzed, as well as more accurate assessment made of fishing locations, it will be difficult to further refine our numbers.

**TABLE 1: FEDERAL NWHI BOTTOMFISH COMMERCIAL CATCH AND LANDINGS AFFECTED BY AREA CLOSURES
PER EXECUTIVE ORDERS 13178/13196 (WORSE CASE SCENARIO) SELECTED AREAS BY MAU AND HOOMALU ZONE, 1996-2000**

Selected NWHI areas	Bottomfish Management & Other Species						Pelagic Management Species					
	Lbs. Caught	% All NWHI Areas	% Rep- orted Area	Value	% All NWHI Areas	% Rep- orted Area	Lbs. Caught	% All NWHI Areas	% Rep- orted Area	Value	% All NWHI Areas	% Rep- orted Area
Mau Zone												
Nihoa	114,344	6.9		\$331,033	6.5							
Impacted area (16123A)	73,761	4.4	64.5	\$216,574	4.2	65.4						
Necker	236,712	14.2		\$657,562	12.9							
Impacted areas (16423B - 16423F)	207,663	12.5	87.7	\$564,197	11.0	85.8						
Hoomalu Zone												
French Frigate area closures *	159,119	9.6		\$500,675	9.8		14,879	0.9		\$30,456	0.6	
Other Hoomalu Zone Closures	102,347	6.2		\$285,002	5.6							
Impacted areas	46,827	2.8	45.8	\$130,547	2.6	45.8						
Impacted Area Totals	487,370	29.3		\$1,411,993	27.6		14,879	0.9		\$30,456	0.6	
All NWHI Areas	1,663,633			\$5,112,127			1,663,633			\$5,112,127		

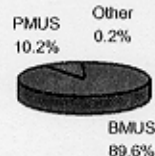
* Includes French Frigate Shoals, French Frigate Shoals Pinnacle, 66 Bank, Brooks Bank, etc.

**TABLE 2: SUMMARY OF ALL FEDERAL NWHI BOTTOMFISH CATCH AND LANDINGS
NECKER ISLAND, MAU ZONE, 1996 - 2000**

Area: **Necker**
Zone: **Mau**
No. trips: 75

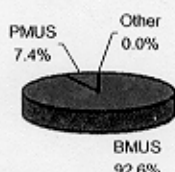
Species	Catch	
	Lbs. Caught	No. Released
BMUS	236,178	1,993
PMUS	26,758	646
Other	534	34
Total	263,470	2,673

Necker (Lbs. Caught)



Species	Landings	
	Lbs. Sold	Value
BMUS	224,800	\$657,344
PMUS	21,915	\$52,574
Other	210	\$218
Total	246,925	\$710,135

Necker (Value \$)



Species	Catch		Depth (fathoms)					
	Lbs. Caught	No. Released	Beginning			Ending		
			Min	Max	Ave	Min	Max	Ave
BMUS:								
Uku	106,159	28	13	130	43.79	15	150	77.13
Butaguchi Ulua	47,323	43	15	150	56.64	22	180	92.25
Opakapaka	36,241	0	16	150	56.58	22	180	92.21
Hapuupuu	18,659	0	16	150	60.15	20	180	97.02
Onaga	15,559	0	16	150	77.89	90	150	127.20
Ehu	3,714	0	15	130	59.97	30	150	104.41
Papa Ulua	2,953	0	15	130	43.83	15	150	77.49
Gindai	1,588	0	16	130	58.30	50	150	101.29
Kalekale	1,582	0	15	130	53.76	35	150	100.15
White Ulua	916	19	20	80	46.67	70	140	96.67
Gunkan Ulua	616	0	20	60	46.79	40	130	84.69
Kahala	395	1,892	13	100	42.41	15	150	85.66
Omilu	253	10	15	50	32.07	15	105	58.75
Hogo	90	0	30	130	68.46	85	150	114.06
Lehi	78	0	60	60	60.00	80	90	85.00
Yellow-tail Kali	26	0	25	60	45.00	80	110	91.43
Ulua-misc.	12	0	50	50	50.00	70	70	70.00
Wahanui	5	0	15	16	15.50	70	105	87.50
Taape	2	1	17	30	23.50	105	130	117.50
PMUS:								
Ono	15,093	1	13	30	19.53	30	90	59.41
Ahi Yellowfin	4,781	18	17	400	54.57	40	600	99.64
Kawakawa	3,283	41	13	60	27.52	15	130	62.69
Mahimahi	2,512	5	13	400	42.96	30	600	83.40
Mano Shark-misc.	635	581	15	100	37.01	15	180	69.28
Ahi Bigeye	193	0	0	0	0.00	0	0	0.00
Striped Marlin	134	0	0	0	0.00	0	0	0.00
Thresher Shark	60	0	45	45	45.00	90	90	90.00
Monchong	44	0	30	100	65.00	130	140	135.00
Aku	23	0	0	0	0.00	0	0	0.00
OTHER:								
Kagami Ulua	146	0	18	18	18.00	30	30	30.00
Kamanu	114	3	13	70	42.00	30	100	75.00
Kaku	71	2	15	17	16.00	30	60	45.00
Weke Ula	62	0	20	80	44.38	50	140	81.25
Opelu	53	0	0	0	0.00	0	0	0.00
Miscellaneous	25	10	13	60	38.30	30	150	118.00
Aweoweo	23	0	60	60	60.00	140	140	140.00
Aawa	21	0	15	80	42.40	60	150	102.00
Kawealea	8	0	17	17	17.00	150	150	150.00
Mu	6	0	0	0	0.00	35	35	35.00
Nohu	5	0	0	0	0.00	130	130	130.00
Dobe Ulua	3	0	0	0	0.00	30	30	30.00
Opelu Mama	2	0	60	60	60.00	130	130	130.00
Hauliuli	1	12	16	40	28.00	70	70	70.00
Ahaaha	0	1	13	13	13.00	30	30	30.00
Tiger Shark	0	6	16	60	36.20	20	80	66.00

TABLE 3: FEDERAL NWHI BOTTOMFISH COMMERCIAL CATCH AND LANDINGS
EXAMPLE OF SINGLE QUADRANT INFORMATION WITHIN A 20 SQ. N. MILE GRID FISHING AREA
1996-2000

Bank: Necker			Catch	Landings		Depth (fathoms)					
Area Code	Qua	Species	Lbs. Caught	Lbs. Sold	Value	Beginning			Ending		
						Min	Max	Ave	Min	Max	Ave
16423B	South West	BMUS:									
		Uku	15,705	15,097	\$45,721	0	60	32.8	0	140	66.1
		Butaguchi Ulua	7,725	7,294	\$9,991	0	60	38.5	0	150	78.8
		Opakapaka	7,191	7,143	\$28,887	0	60	40.6	0	150	82.7
		Hapuupuu	1,920	1,822	\$6,340	0	60	42.0	0	140	86.3
		Ehu	817	788	\$2,716	20	60	47.7	35	140	93.8
		Gindai	385	367	\$969	0	60	47.1	0	140	91.4
		Onaga	349	349	\$1,525	0	60	42.1	0	140	97.1
		Papa Ulua	284	284	\$343	0	60	36.4	0	110	68.3
		Kalekale	247	243	\$773	0	60	44.2	35	140	89.0
		Gunkan Ulua	208	208	\$344	25	60	45.0	60	100	80.8
		Lehi	23	15	\$57	60	60	60.0	80	90	85.0
		Hogo	23	9	\$21	30	50	41.0	90	150	118.0
		Omilu	20	0	\$0	25	50	41.7	80	90	83.3
		Yellow-tail Kali	20	0	\$0	25	50	41.3	80	110	90.0
		Kahala	0	0	\$0	0	60	33.1	0	150	75.7
		Taape	0	0	\$0	30	30	30.0	105	105	105.0
		White Ulua	0	0	\$0	20	20	20.0	90	90	90.0
		Subtotal	34,916	33,619	\$97,686						
		% of area total:	46.5	46.8	43.5						
		OTHER:									
		Kagami Ulua	40	25	\$25	0	18	9.0	0	30	15.0
		Kaku	31	10	\$5	0	0	0.0	0	0	0.0
		Weke Ula	4	4	\$5	25	25	25.0	110	110	110.0
		Tiger Shark	0	0	\$0	25	25	25.0	80	80	80.0
		Subtotal	74	39	\$35						
		% of area total:	0.1	0.1	0.0						
		AREA TOTAL	75,109	71,860	\$224,595						

COMMERCIAL FISHERIES STATISTICAL CHART

(CHARTS B, C, D, and E)

INSTRUCTIONS

The area where you fished is important. Use this chart to find the area where you fished.

1. The areas on each chart are numbered. Find the area where you fished on the chart and write the area number in "Area Fished" on the catch report form.
2. These charts contain some areas that are represented by blocks (about 20 square nautical miles) that are labeled with the letters "A" to "I". These letters are part of the area number. For example, Chart B contains a block of area labeled "I" which is located southwest of the island of Nihoa, approximately 162 degrees West Longitude by 23 degrees North Latitude. That block is part of a 60 square nautical mile block of area which is assigned the number "16222". The area number for the 20 square nautical mile block is "16222I".

CHART INFORMATION

Some mid-ocean areas of Charts B-E are represented by blocks covering 1 degree latitude by 1 degree longitude, or about 60 square nautical miles. Other mid-ocean areas of Charts (B-H) also contain blocks covering 20 minutes latitude by 20 minutes longitude, or about 20 square nautical miles.

THESE CHARTS ARE NOT TO BE USED FOR NAVIGATIONAL PURPOSES

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Washington, D.C. 20240

Division of Aquatic Resources, DLNR
State of Hawai'i
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